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ABSTRACT

Research literature shows that current uses of computers in public school education are not reaching minority populations, and that females and ethnic minority students are less likely to have access to a computer at home. In addition, a study of computer use in the Learning Skills Center (LSC) at the University of Alabama supported the research finding that computer laboratories in schools are both supervised and used primarily by white males. A study of computer use in a small open-use computer laboratory in the Tuscaloosa Public Library showed that 63% of the children in a day camp program who checked out computer programs during free library time were male; the sample was not sufficiently racially diverse to make white/minority comparisons. Potential solutions to these problems include: (1) the hiring of minorities as computer instructors; (2) integration of computer applications courses into the regular secondary school curriculum; and (3) teacher training in computer use, teacher access to available software, and assistance for teachers who wish to modify the curriculum to incorporate computer use. (11 references) (DB)

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MAKING THE COMPUTER LABORATORY ACCESSIBLE TO MINORITIES

by Robert Martin

A PRESENTATION FOR

STUDENTS IN TEACHER EDUCATION--SIG

at the

Seventieth Annual Meeting

of the

ASSOCIATION OF TEACHER EDUCATORS

Las Vegas, Nevada

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MAKING THE COMPUTER LABORATORY ACCESSIBLE TO MINORITIES

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Minorities are being excluded from computer instruction on all fronts: At school, camp and home. The methods of public school computer education are not reaching minority populations, but unfortunately, solutions advanced in the literature to correct the problem are shaky at best and rely on "quick-fix" or "pie-in-the-sky" reasoning.

By perception and fact the computer is heir to a long line of electronic gadgetry, servant of the mathematician, and purveyor of aggressive games. Some believe it is therefore fathomable only by men.

This presentation will present simple and low cost steps schools can implement to help change this perception for reaching minority students, and suggest ideas for teacher education programs to better prepare pre-service teachers in computer use.

THE SITUATION AS REPORTED IN THE LITERATURE.

1. At School: Anderson, Welch, and Harris (1984) reported that computer class enrollment in low income school districts with high percentages of blacks or hispanics was 7 percent. Lockheed and Frakt (1984) found minority students are "much less likely" to be in science related activities. Because computer classes are reserved for the students with strong math and science backgrounds, one would expect a low percentage of minority students in computer classes. That is exactly the situation.

Ascher (1984) found that suburban schools teach computer programming, while inner-city schools are more apt to use CAI drill and practice. The suburbanites learn to tell the computer what to do while the less affluent learn to do as they are told by the computer.

Most computer experiences for women at this time are in traditional areas such as business education. When 4- to 8-year-olds are given free access to a computer, 85 percent of the users are boys (Silverman, 1982, quoted in Rampy, 1983). It should be noted that this research did not distinguish between computer use for educational tasks and entertainment.

2. At camp: Mirura & Hess (1984) found that in computer camps held after school hours participants were 91 percent caucasian and 74 percent male. Teachers and leaders at computer camps are usually men. A survey of one provider of summer computer workshops revealed that the teaching staff was 100 percent male for three years (McLean,et al,1985, 1986, 1987).

3. At Home: Lockheed and Frakt (1984) found parents more likely to buy computers for their sons than for their daughters. Rampy (1983) found economically depressed parents were unlikely to buy computers for home use.

Clearly, computers are being purchased for home use. The home market accounts for 10 times more sales of hardware and software than education. Program developers spend a great deal of time and money researching potential markets. Cardenas (1983) found many programs are developed for white middle-class boys.

This has a double negative effect on minority students. First, minority students are unable to develop and practice skills outside the school. Second, minority students without home access to computers are not as knowledgable about computer applications.

ADDITIONAL RESEARCH

Much of the research reported in the literature is dated. Additional research was compiled at the University of Alabama in the summer of 1989. Two computer laboratory situations were examined in the University area: (1) The Learning Skills Center (LSC) at the University of Alabama, and (2) the computer area in the Tuscaloosa Public Library.

In the Summer of 1989, research concerning computer use was conducted at the Learning Skills Center (LSC), University of Alabama. The LSC houses a computer lab that is accessible to students from 8:00 a.m.-10:00 p.m. Monday through Thursday and 8:00 a.m.-4:45 p.m. on Friday. Assistance with the survey was provided by LSC staff. The lab is designed for individually paced use. During the summer semester 54 percent of the users where male and 84 percent were white. Only one non-white male and four non-white females used the computer lab during the research period. This survey population might be somewhat contaminated because some of the students using the lab were part of a basic math course that required computer lab work outside of class.

The public library in the City of Tuscaloosa houses a small open-use computer laboratory. Library users are allowed to check-out programs from the Librarian to be used on Library's computers. During the Summer of 1989, children

in the day camp program of the Central YMCA of Tuscaloosa were allowed to use the computers during free library time. Assistance with the survey was provided by YMCA staff. Sixity-three percent of the children checking out programs were male. The population of the day camp was not sufficiently racially diverse to allow for white/minority comparisons.

This research tends to confirm that the situation concerning minority use of computers has not changed significantly.

COMMON REMEDIES

There are two commonly reported remedies to increase minority computer use reported in the literature: (1) Use minority teachers or guest speakers, and (2) review software to be sure the program is racially and sexually neuter.

First, to provide positive role models, guest speakers in computer classes should include minorities and women. Female and minority faculty should be encouraged to teach computing classes. Minority students need successful role models if behavior is to be modified.

Second, all programs should be carefully screened for racial or sexual stereotypes. The title of computer games and software were perceived by the consumer to be directed to a male market. Unfortunately, usually teachers must review

software with only a one-paragraph sales "tease" and a cartoon of how the programmer wanted the graphics to look.

OTHER REMEDIES SUGGESTED BY THIS RESEARCH

There must develop among educators a concensus about computer use in education. Are we to have computer programming or computer applications? Secondary schools need to be in the business of teaching students the practical applications of computers. Introductory computer classes, stressing applications rather than program writing, should be required of all students. School systems and teachers can try several approaches with minimum expense. Computer instruction should be part of the regular curriculum, and computers should be housed in classrooms.

(1) Computer assignments should become part of the regular curriculum. All students need to see the practical uses of computers in everyday life. The curriculum in the school system must be updated to reflect the use of the computer as a heuristic tool in all academic areas. Any improvement in the plight of minorities in computer classes will have to include fundamental changes in the way minorities view the technology. Computer assignments should be an integral part of all classes.

(2) Computers should be in the classrooms--that is where the learning takes place. While the laboratory is a

cost-efficient delivery method, it removes the teacher from the teaching process. Teachers can set a positive example for all students of the advantages of using the computer to solve problems in their daily work. The significance of this situation is compounded if the teacher is a woman or member of a racial minority. Often these teachers are the only positive role models for minority students.

Students should feel the computer is a significant part of their education. When computers are in a laboratory, they become a suspect element in education.

WHAT CAN BE DONE IN TEACHER EDUCATION?

Teacher educators need to make computer familiarity a priority in teacher education programs:

First, teacher education institutions should provide pre-service or in-service education. Teacher educators can take steps to change teachers' attitudes toward computer based instruction. Teachers frequently experience computer anxiety. Teachers have resisted the introduction of computers in broad based education usage because of a perceived threat to the teacher's traditional role (Bowden, 1982). Teacher educators should demonstrate the value of the computer in cost and time saving.

Second, teacher education institutions should provide evaluations of instructional software. Programs should be

checked for racist or sexist orientation and the information shared with school systems within the teacher training institution's service area. Classroom teachers do not have access to programs prior to purchase.

Third, teacher education institutions can help teachers formulate curricula for use of computers in their classrooms. Computers should be used for everyday education, not "special" projects. Teacher Education institutions can assist classroom teachers in locating appropriate Computer Assisted Instruction (CAI), and suggest hardware.

Summary

The methods of public school computer education are not reaching minority populations. Unfortunately some solutions advanced in the literature to correct the problem are shaky at best and rely on "quick-fix" or "pie-in-the-sky" reasoning. Some quality ideas advanced in the literature are:

Minority-group members should be used as computer instructors or guest speakers when possible, and review software for offensive content.

Computers should be integrated into regular curriculum of secondary schools . At least some computers should be installed in each classroom. Care should be taken to insure that each class had the use of computers to complete some

assignments. Programming courses should be available as electives for any interested student.

Teacher education institutions should provide training for the use of computers in content areas. Teacher training institutions should provide classroom teachers with reviews of available software, and allow teachers to use college computer laboratories to review programs. Teacher education institutions should provide assistance in curriculum modification to maxamize computer use in content areas.

Since computers are going to be used to support all kinds of endeavors, understanding computer use is an important part of education. Everyone should have an equal chance for computer education. I mean, like they even have computers at McDonalds. AWESOME!

SIDEBAR--COMPUTER LABS

When a limited number of computer stations are available in the school, a computer laboratory is often established or the computers are housed in the media center in the library. This is a tempting solution. Fewer computers can be purchased. There is no need to hire additional staff, and the computer users will be monitored without teacher intervention. This allows the teacher to work with slower students or to assign remedial and advanced work at the computer lab. But the computer lab is becoming a "white-boy's turf" that minority students are reluctant to enter.

SIDEBAR--THE BACK DOOR?

The haphazard approach now being followed has caused the computer to come in the back door of the school house.(Cardenas, 1983) Most computers in schools at this time were purchased by local PTAs or local support groups. While there is nothing wrong with community commitment to quality education, there has been no state or federal plan to guide these purchases, and the result is a patchwork of models, memories, and peripheral equipment. Low-income schools do not have wealthy PTA members to provide the extras, much less funds for computers and software. Computer purchases should be part of the school's budget process. This would allow each school in a system to have compatible equipment and to share software.

SIDEBAR--HOW MANY JOBS, ANYWAY?

There is some controversy concerning the number of jobs that will be created in high technology. There is no doubt that computers are now used in a wide range of applications, and that most jobs in the future will be affected by the "information" revolution, but will this change in the job market require massive additions of computer classes, or will computer applications be integrated into the existing curriculum? Computer science can play an important role in the reestablishing of excellence in education in the United States. But in what direction should we go?

SIDEBAR--MY SOAPBOX!

Improvement in minority participation in computer activities will be predicated by students answering the call of a higher level of needs. It will do little good to bring equipment and teachers into these schools without a fundamental change in the economic situation of the inner-city school population. Functionally illiterate parents see little good in high technology and will not be induced to support, either philosophically or financially, improvements of the scale needed for computer literacy. There must be, along with the opportunity to gain knowledge of high technical subjects, the opportunity to use the knowledge after graduation.

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